DOCUMENT RESUME

ED 146 667 HE 009 436

AUTHOR Jeacock, Robert L.
TITLE The Impact of Malaspina College on the Local Economy.
PUB DATE Sep 77
NOTE 44p.

EDRS PRICE MF-$0.83 HC-$2.06 Plus Postage.
DESCRIPTORS Business; Colleges; College Students; *Community Benefits; Community Involvement; Construction Programs; *Economic Development; *Educational Economics; Employment Patterns; *Expenditures; Facility Expansion; Foreign Countries; Higher Education; Institutional Research; *Local Government; Operating Expenses; Research Projects; *School Community Relationship; Tax Rates
IDENTIFIERS British Columbia; *Malaspina College (British Columbia)

ABSTRACT

For the purpose of the study, the local economy of Malaspina College in Nanaimo, British Columbia was defined as the school district. The variables used to assess the college's impact were: (1) income injected into the local economy as a result of the expenditures of the college, its employees, and its students; (2) college-related revenues received by local government; (3) costs incurred by local businesses and governments due to the existence of the college; (4) the number of local jobs attributable to the presence of the college; and (5) the expenditures for recently completed construction work. A model was used to estimate the magnitude of the short-run impact of the college over a given period of time (the fiscal year 1976-77). It was found that the largest impact on the local business community came from direct student expenditures, followed by direct expenditures by full-time employees, and direct nonsalary operating expenditures. Local governments received almost a million dollars in revenue as a result of the college. The salary and nonsalary operating expenditures and the nonhousing expenditures of students supported 302 jobs directly and 393 jobs indirectly. The total direct and indirect impact of the recent construction amounted to almost $4.5 million, and 120 direct and indirect jobs. (MSE)

****
* Documents acquired by ERIC include many informal unpublished *
* materials not available from other sources. ERIC makes every effort *
* to obtain the best copy available. Nevertheless, items of marginal *
* reproducibility are often encountered and this affects the quality *
* of the microfiche and hardcopy reproductions ERIC makes available *
* via the ERIC Document Reproduction Service (EDRS). EDRS is not *
* responsible for the quality of the original document. Reproductions *
* supplied by EDRS are the best that can be made from the original. *
****

ED146857

HE

THE IMPACT OF MALASPINA COLLEGE ON THE LOCAL ECONOMY

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Malaspina College

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC) AND USERS OF THE ERIC SYSTEM."

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

By

Robert L. Jeacock

Instructor

Administrative Studies

HE009436

September, 1977

ACKNOWLEDGEMENTS

I wish to thank the Bursar's Office of Malaspina College, the City of Nanaimo, the Regional District of Nanaimo, the Town of Ladysmith, the British Columbia Assessment Authority, School District 68 and Concordia Management Company Limited for their cooperation in providing a large portion of the data for this study.

For patiently labouring through the tedious process of typing this paper, I wish to express my appreciation to Celia Driscoll for typing the semi-final copy and to Trudy MacLeod for typing and proofreading the final version.

Thanks are due to my colleague Chris McDonnell for helping me to clarify some of the more difficult theoretical parts of the paper.

I owe a special debt of gratitude to Gerry Kingston, Shannon Williamson and especially Doug Payne who, as student research assistants, worked diligently collecting data and assisting with the many calculations.

TABLE OF CONTENTS

	Page
INTRODUCTION	1
SUMMARY	2
METHODOLOGY, RESULTS AND LIMITATIONS	6
INTRODUCTION	6
THE IMPACT ON LOCAL BUSINESS	6
Non-Salary College Expenditures	6
Expenditures by College Employees	7
Expenditures by College Students	9
Total Expenditures and The Income and Expenditure Multipliers	12
Income of College-Related Enterprises	14
THE IMPACT ON LOCAL GOVERNMENT	15
College-Related Revenues	15
College-Related Operating Costs	17
Foregone Real-Estate Taxes	17
THE IMPACT ON LOCAL EMPLOYMENT	18
Economic Base Theory and Regional Employment Multipliers	18
Employment Supported by Wages and Salaries of College Personnel	19
Employment Supported by Student Non-Housing Expenditures and College Non-Salary Operating Expenditures	20
Total Employment Supported by College Operating Expenditures	20
THE IMPACT OF COLLEGE-RELATED CONSTRUCTION	22
Introduction	22
Local Expenditures on Wages and Salaries	23
Local Expenditures on Materials	23
Profits	23
Total Expenditures and the Multiplier Effects	24
Employment Supported by Construction Expenditures	25

Page

CONCLUSION 26

APPENDICIES 27

BIBLIOGRAPHY 38

INTRODUCTION

One way of viewing the benefit or influence that Malaspina College has on the surrounding environment is through the many services that it offers. As an institution of higher education the College provides a wide variety of educational services such as regular day and evening classes for full-time and part-time students, continuing education courses, individual lectures, workshops, seminars, conferences and other related activities. There are also professional and business services from which the community can benefit. These include research, consultation, publications, library and audio-visual services. The College's influence is also felt by sponsoring or providing the facilities for cultural, social, athletic and other public events. Finally, there are a number of community services that it provides such as tutoring and the day-care centre.

Although few people would deny the benefit of these services, it is difficult, and in some cases impossible, to measure their impact on the surrounding environment. This certainly does not diminish the importance of these services nor does it mean that the impact of the College is beyond measurement. This study attempts to measure the impact of Malaspina College on one aspect of the environment - the local economy.

SUMMARY

An impact study of this nature presents three initial problems: (1) the development of a suitable definition of the local economy, (2) the designation of a number of variables that will adequately assess the impact of the College on the local economy, and (3) the creation of a model, or system of equations, that organizes the preceding variables in such a way so as to provide a reasonable estimate of the magnitude of the impact.[1]

The local economy was defined as School District 68. Initially the College Region appeared to be the most logical definition because of the services that the College provides to the people of the Region. This definition was rejected, however, because the College-related expenditures, which constitute a major portion of the impact, do not have any appreciable influence on an economy the size of the College Region. On the other hand, the City of Nanaimo was deemed to be too small an area because, quite obviously, the impact of the College goes beyond the city limits. Therefore, the School District was chosen to represent the local economy. In addition, it represents a political subdivision for which data was relatively easy to collect.

The variables that were used to assess the impact of Malaspina College represent: (1) income injected into the local economy as a result of the expenditures of the College, its employees and its students, (2) College-related revenues received by local governments, (3) costs incurred by local

---

[1]The model used in this study was adopted from: John Caffrey and Herbert H. Isaacs, Estimating the Impact of a College or University on the Local Economy (Washington, D.C.: American Council on Education, 1971).

businesses and governments due to the existence of the College, (4) the number of local jobs attributable to the presence of the College, and (5) the expenditures of recently completed construction work.

Because part of the initial expenditures of the College, it employees and its students ends up as income to local individuals who in turn generate income for other people by spending a portion of their income in the local economy, College-related expenditures have a much larger impact than is indicated by the initial round of transactions. To capture this affect, income and expenditure multipliers were estimated for the local economy. Based on similar reasoning, an employment multiplier was also estimated thereby allowing for a more accurate projection of the number of local jobs resulting from the presence of the College.

The model used in the study is composed of approximately forty equations and required some eighty pieces of data. It is based on simple linear cash-flow formulas that take into account only those variables that were easily quantifiable and for which data was readily available. The model is designed to estimate the magnitude of the short-run impact of Malaspina College on the local economy over a given period of time, in this case the 1976-77 fiscal year of the College. It is not capable of providing a comprehensive, in-depth analysis of the entire economic relationship between the College and the community. In addition, it is not designed to resolve policy questions of a predictive nature such as whether the College should expand its services, nor does it directly measure the qualitative impact of these services. Finally, the model tends to provide a built-in underestimation of the actual economic impact of the College.

Although the model used in this study does not provide all the information that one would like to receive regarding the economic impact of Malaspina College, it is a comprehensive and credible device for estimating the effect of College-related cash-flow on the local community.

The results of the study indicated that the largest impact on the local business community came from the $2.3 million in direct student expenditures. This was followed by $2.0 million in direct expenditures by full-time College employees and $0.5 million in direct non-salary operating expenditures by the College. Once the multiplier process was taken into consideration the direct, or first round expenditures, produced an additional $2.2 million in local income. The total direct and indirect impact was estimated to be approximately $7.0 million.

In addition to the impact on local business establishments, the presence of the College has an impact on local governments. As a result of real-property taxes paid by College employees and the proportion of provincial grants to public schools allocable to children of College students and employees, local governments received $940,000 in revenue. The operating costs of municipal government services and public school education provided for the College and/or for individuals related to the College was estimated to be $1.2 million. Because of the tax-exempt status of the College, local governments also incurred an opportunity cost of $144,000 in foregone property tax revenue.

With regards to the impact of the College on local employment, the salary and non-salary operating expenditures of the College and the non-housing expenditures of students directly supported 302 jobs. Indirectly, these College and student expenditures contributed to an additional 393 employment positions for a total of 695 jobs.

The final impact that was measured concerned the recently completed $12.6 million addition to the Malaspina College campus. Because the building and site work amounted to slightly more than three-quarters ($9.79 million) of the total, only this portion of the total cost was considered.

The total value of the building and site work was first broken down into wages and salaries, materials and profit, and then the local component of each of these categories was estimated. Direct local expenditures of $2,390,866 and $720,436 were made for wages and salaries, and materials respectively. Local construction firms were estimated to have earned $110,525 in profits. In total the local economy benefited from $3,221,827 in direct expenditures. Upon the application of the appropriate income and expenditure multipliers, the total direct and indirect impact was estimated to be $4,447,665.

With regards to the impact of local construction expenditures on local employment, it was estimated that 120 direct and indirect jobs were supported by these expenditures.

On balance, the results of this study indicate that Malaspina College makes a relatively large contribution to the local economy in terms of the total direct and indirect expenditures that are College-related and in terms of the total number of direct and indirect jobs that are supported by these expenditures.

METHODOLOGY, RESULTS AND LIMITATIONS

INTRODUCTION

The model used in this study is divided into three sub-models each of which estimates the impact of Malaspina College on a different sector of the local economy. The first sub-model measures the impact on local businesses by accumulating the direct local purchases of the College, its employees and its students and by projecting these expenditures through the multiplier process. In addition, the cost of unrealized local business volume due to the existence of College enterprises is also accounted for.

The second sub-model measures the economic impact on local governments by estimating the effect of the College on local government revenues and expenditures. This is accomplished by determining the tax and non-tax revenue received by local governments directly from the College, its employees and students as well as any provincial aid that is College related. Offsetting the revenues are certain College-related costs which include a portion of the operating costs of municipal government and public school services and the value of real estate taxes foregone as a consequence of the tax-exempt status of the College.

The final sub-model measures the economic influence of the College on local individuals by estimating the number of jobs attributable to the College.

THE IMPACT ON LOCAL BUSINESS

Non-Salary College Expenditures

Malaspina College's non-salary operating expenditures of $518,184 were determined by subtracting from the College's 1976/77 total operating funds expenditures the salaries and

fringe benefits of College employees, expenditures that were known to be non-local as well as taxes and other payments to governments.[2] The resulting difference was then multiplied by 0.43 or the proportion of non-salary operating expenditures made in the local economy. This proportion, which is a ratio of the value of purchases made from local firms to the value of total purchases, was based on purchase order information for the period of September 1976 to February 1977.

These calculations are subject to at least two limitations. By exempting employee fringe benefits and those expenditures classified as "known to be non-local", the impact is underestimated because a portion of those expenditures may have benefited someone in the local community. Concomitantly, because some large contracts were omitted from the calculation of the portion of the College expenditures made locally, the result may be over or understated. In this particular case, it is difficult to determine the magnitude and direction of the bias as many of the large contracts were with national firms that have a local outlet.

Expenditures by College Employees

College employees were divided into two groups, those who lived within the local economy (School District 68) and those who did not and were considered to make only housing and non-housing expenditures. The total local expenditures by College employees was approximated by adding together non-housing expenditures of local and non-local faculty and the rental housing expenditures of local employees.[3]

---

[2]Malaspina College Financial Statements and Schedules for the year ended March 31, 1977. Expenditures known to be non-local included books, periodicals, films and cataloguing, professional fees, insurance, travel and conferences, guest speakers and capital debt burden. Other payments to government included water utility, Department of Public Works and postage.

[3]The impact of local non-rental housing expenditures is accounted for in a later model that includes an estimate of real estate taxes paid to local governments.

The information for the preceding calculations was gathered primarily from surveying the 257 full-time College employees (Appendix A). Seventy-nine or approximately 30 percent of the questionnaires were returned with only a small number of questions unanswered.

The findings of the survey revealed that approximately 92 percent of the full-time employees lived within the local economy, they spent 73 percent of their total expenditures on non-housing goods and services and approximately 68 percent of their non-housing expenditures were made locally. The survey also indicated that each non-local employee spent approximately $263.50 per month within the local economy. In total, $1,950,244 was spent in the local economy last year by College employees. Of this amount, local employees spent $202,291 for rental housing and $1,682,543 for non-housing items while non-local employees made non-housing expenditures of $65,010.

A priori, it appears that these calculations understate the magnitude, and thus the impact, of the local expenditures of College employees. Underestimation results from the omission of expenditures associated with owner occupied dwellings such as real estate broker's fees, interest charges on mortgages and housing insurance premiums.[4] In addition, imputed rent for houses owned outright by College employees was not accounted for, nor was non-College related income.[5] Although no consideration was given to either non-housing borrowing or saving, it is highly unlikely that the difference between the two is sufficiently large enough to warrant consideration.

Finally, there are two other omissions that should be

---

[4]Because it is difficult to determine the proportion of these expenditures that benefit the local community, they were omitted entirely to preserve the conservative nature of the model.

[5]Imputed rent is income that is foregone because the house is not offered on the rental market.

recognized although they appear to be relatively insignificant. First, overestimation of the local rental income is possible depending upon the proportion exported from the local economy by non-resident owners. Second, regardless of the different income levels of College employees, they were assumed to have spent the same proportion of their income in the local economy. Although it is a well known fact in economics that the propensity to import becomes larger the higher the income, it is doubtful that the differences in salaries among College employees is large enough to produce significantly different propensities to import.

Expenditures by College Students

The local expenditures of students were determined similarly to College employees expenditures. They were categorized as either housing or non-housing expenditures while the latter category was tabulated separately for renters and non-renters.

Because the source of student financial aid for many vocational programmes differs from academic, career and technical programmes and also because the records for the two groups of students were not computerized, separate surveys using the same group of questions were used to gather student expenditure information (Appendix B). The vocational survey was structured so as to include responses from students in a wide cross-section of vocational programmes, while the academic, career and technical students were chosen at random from computerized student records. Eighty-nine of the 518 full-time vocational students and 112 of the 789 full-time academic, career and technical students were questioned.[6]

The survey indicated that 54 percent of the academic, career and technical students lived in other than rented accommodation and spent an average of $108.91 per month on

---

[6]The enrollment figures represent averages of full-time fall and spring semester enrollments for 1976/77.

non-housing items of which 33 percent was spent in the local economy. Approximately 49 percent of the vocational students were non-renters.[7] They spent considerably more per month on non-housing goods and services, approximately $179.38 and less in the local economy, about 67 percent.

In total, full-time Malaspina College students, who did not rent accommodations, made local non-housing expenditures of $674,389 during the last academic year.

When compared to students who did not rent accommodations, the non-housing expenditures of renters were higher. Academic, career and technical students who rented housing comprised 46.4 percent of the total full-time student population. They spent an average of $158.17 per month on non-housing goods and services with 91 percent of this amount spent locally. The average monthly non-housing expenses of vocational students was slightly less, amounting to $145.62 and the proportion paid out to the local community was also less, amounting to approximately 88 percent. Some 50.5 percent of vocational students rent housing.

Altogether, students who rented housing during the last academic year paid out $823,951 for local non-housing goods and services.

The final category of student expenditures, local rental housing, equalled $799,919 for the 1976/77 school year. On the average each vocational student paid $127.71 per month for rent while each academic career and technical student paid $136.80.

When the three categories of expenditures were totalled,

---

[7]Of those vocational students who did not rent housing, 15.7 percent lived in the College dormatory, 16.9 percent paid room and board to private individuals and 16.9 percent lived at home. The respective proportions for academic, career and technical students were 0.0 percent, 17.0 percent and 36.6 percent. None of the students surveyed were buying or already owned homes.

approximately $2,298,259 was spent in the local community last year by full-time Malaspina College students.[8]

The students of the College produced by far the largest injection of income into the local economy when compared to the College itself or its employees. For this reason it is important to scrutinize the methodology and results in some detail. From an aggregate standpoint, the almost $2.3 million in student expenditures is underestimated because it does not include expenditures for room and board or local expenditures of students who commute daily from outside the local economy. Because the number of students in these cases is known to be small, the underestimation is thought to be small also. As was the case with employee rental expenditures, there is some possibility, although slight, that the comparable figure is overestimated depending upon the proportion of rent exported by non-resident owners.

The most obvious limitation is the lack of information regarding the extent to which the sample data is representative of the population. Nevertheless, it does appear that the student responses have produced data that is credible.

From the feedback received while the student survey was being conducted, it was very evident that students knew what their housing expenditures were, however, they were less sure of their non-housing expenses and the portion spent locally. As far as the average monthly rent per student is concerned, the results may appear to be high. This conclusion is less likely when one considers that the vast majority of students surveyed lived alone or with one other person. Although students appeared to be less sure of their non-housing expenditures, when these expenses were added to the rent the average

---

[8]Vocational student expenditures were tabulated on the basis of a twelve month year. The academic, career and technical expenditures were based on eight months.

monthly cost-of-living, which ranges from $262 for vocational students to $284 for academic, career and technical students, meets the usual monthly cost-of-living estimates for students attending college or university.

With regards to the proportion of non-housing expenditures spent locally, it is difficult to determine a priori what proportion students would spend in the local community. The only response which appears to be somewhat low is the 67 percent given by vocational students who did not rent accommodations. The others, which range from 83 to 91 percent are acceptable.

The only other responses that do not correspond are the average monthly non-housing expenditures of "non-renters". Vocational students indicated that they spent $179.38, or approximately $70 more than the $108.91 spent by academic, career and technical students. By assuming that students who live at home spend less on non-housing goods and services than students who do not, this large difference might be explained by the fact that 37 percent of the academic, career and technical "non-renters" live at home compared to 17 percent of the Vocational "non-renters".

In summation, it is evident that questions can be raised about the credibility of the student survey statistics. However, when viewed in terms of what a College student would reasonably be expected to spend per month on food, clothing, shelter and entertainment, the figures come very close to the accepted norm.

Total Expenditures And The Income And Expenditure Multipliers

The direct local expenditures of the College, its personnel and students were estimated to be $519,184, $1,950,744 and $2,298,259 respectively, for a total initial impact on the business sector of the local economy of $4,767,187. The impact of direct College-related expenditures does not end, however, with this initial round of transactions.

Further expansion of expenditures, and income, arises through a multiplier process. For every dollar of College-related expenditures received by local firms and individuals a certain portion is spent in the local economy while the balance is spent elsewhere. As a result of these local expenditures other firms and individuals receive income and they in turn spend a portion in the local economy. This recycling process, which produces smaller and smaller increments of local income with each successive round of transactions, leads ultimately to a multiple expansion of the initial amount of College-related expenditures.

Under this process one can see that the size of the multiplier is positively related to the proportion of income spent locally. More specifically, the multiplier varies with the size and demographic characteristics of the population, the saving and spending preferences of local individuals, the dependence on goods and services produced outside the local economy (imports) and the industrial and commercial structure of the local economy.

In addition, the size of the multiplier is affected by the nature of the firm or institution whose impact is being measured. For example, the impact of the College results from the induced stimulus, or backward linkage, that is a consequence of the purchases of locally produced inputs. Other organizations may contribute to further expansion if their output is used as input into other local firms (forward linkage).

Although it is not the primary purpose of this study to calculate an income multiplier from primary data, it is possible to advance a reasonable estimate. Income multipliers associated with various regions within British Columbia and with various kinds of enterprises have been estimated as a result of previous studies. In the Kitimat/Terrace and Prince George regions, multipliers of 1.25 and 1.40 respect-

ively were used in determining the impact of the BC/NKK steel mill.[9] An inter-industry study of the greater Vancouver economy used a multiplier of 1.68 for the entire education sector of the economy.[10] Finally, in the Alberta cities of Lethbridge and Calgary multipliers of 1.54 and 1.90 respectively were used in measuring the impact of the Universities of Lethbridge and Calgary.[11] Based on a simple model for the calculation of an income and expenditure multiplier (Appendix C) and given the fact that the impact of Malaspina College results from induced stimulus only, an expenditure multiplier of 0.54 and an income multiplier of 1.35 appear to be appropriate when compared to the above estimates.

Applying the income multiplier to the direct local income of College employees ($1,950,244) resulted in the generation of $2,632,829 in direct and indirect income. When the expenditure multiplier was applied to the local non-salary expenditures of the College ($519,184) and to student expenditures ($2,298,259) an additional $1,521,419 of income was generated. In total, the direct and indirect impact of Malaspina College on the local economy (School District 68) due to incomes and expenditures generated by the College amounted to $6,971,691.

Income of College-Related Enterprises

The College engages in a number of activities which are comparable to, and may tend to compete with, local private business establishments. The dormitories, the cafeteria, the

---

[9] British Columbia, Department of Economic Development, BC/NKK Joint Steel Mill Feasibility Study - Preliminary Assessment, April 1976.

[10] H. Craig Davis, An Inter-Industry Study of the Metropolitan Vancouver Economy, Faculty of Commerce and Business Administration, University of British Columbia.

[11] J. Allen, et al, Report on the Economic Impact of the University of Lethbridge on the City of Lethbridge, Economics Department, University of Lethbridge, March 1976, and The Impact of the University of Calgary on the City of Calgary, Office of Institutional Research, Report No. 64, March 1971.

bookstore, as well as, College-sponsored films and the rental of College equipment, services and facilities are all examples of such activities. During the 1976/77 fiscal year, Malaspina College realized income of $356,630 from the operation of the bookstore, food services and student housing.[12]

The operation of College-related enterprises that reduce the market potential to local firms represents a cost to the local economy. Although it is difficult to estimate the magnitude of this cost, it may be approximated by the amount of revenue foregone by local business establishments as a consequence of competition from the College. Consistent with the conservative nature of the models used in this study, the entire $356,630 is considered to be income foregone by local businesses as a consequence of College-related enterprises.

THE IMPACT ON LOCAL GOVERNMENTS

College-Related Revenue

The amount of College-related revenue received by local governments during the last year was estimated to be $939,847. The sources of this revenue were real-estate taxes paid by local College personnel, provincial aid to public schools allocable to children of College employees and students and utility revenue paid by the College.

The amount of real-estate taxes paid by College employees was determined first by multiplying the average assessed value of private property in School District 68 ($39,220.93) by the

---

[12] Malaspina College Financial Statements and Schedules for the year ended March 31, 1977. The College received a small amount of income from the operation of other College-related enterprises however, a separate accounting of this revenue was not made in the 1977 Financial Statement.

local private residential tax rate for the City of Nanaimo (89.025 mills).[13] The resulting product was then multiplied by the number of local College employees who own homes (236 based on survey results) to yield a total of $609,608.

Except for a very small amount paid by Malaspina College in the form of a user charge for water ($6,000), the balance of the revenue received by local governments came from the proportion of the 1976 provincial grant to public schools allocable to children of College employees and students. The information received from the student and employee surveys revealed that of the 12,549 students who attended schools in School District 68, some 320 were children of College employees and students. As a consequence, $324,238 of the $10,807,953 received by the School District as provincial grants was considered to be College-related revenue.[14]

These estimates of College-related local government revenue are subject to some obvious limitations. For example, it is assumed that College employees own homes of average value, that all private real-property in School District 68 is taxed at the same mill rate, that all the school-age children of College employees and students attend local public schools and, finally, that College employees and students pay only property taxes to local governments for the services rendered. On balance, these assumptions are likely to underestimate the amount of College-related revenue paid to local governments.

---

[13]City of Nanaimo, 1977 Annual Budget. The assessed value of real property was frozen in 1974 and is therefore low when compared to cost or resale value.

[14]The amount of the provincial grant is based on the number of students enrolled in public schools as of October, 1976.

College-Related Operating Costs

The annual operating costs of government services provided for the College and/or for individuals related to the College was estimated to be $1,248,120. The major portion of this cost ($793,426) was associated with government-provided municipal services. This amount was tabulated by multiplying the ratio of persons resident in student and College employee households (2303 based on survey results) to the 1976 population of the local economy (52,100) by the local governments' 1976 operating costs for all municipal services except public schools (Appendix D). The portion of the operating budget of local public schools allocable to College-related persons amounted to $454,694 and was calculated by multiplying the 1976-77 operating budget for School District 68 ($17,488,259) by the ratio of children of College employees and students attending local public schools to the total number of children attending public school.

Because the College is labour intensive, the allocation of costs on the basis of population tends to overstate the costs related to the College. In addition, the previous calculations were based on the assumption that all the operating costs were people-oriented when some might have more appropriately been categorized as property-oriented. This also tends to overstate the costs allocable to the College.

Foregone Real-Estate Taxes

The Malaspina College campus, which encompasses an area of 165 acres, is exempt from the assessment of real property taxes. This exemption represents foregone tax revenue, that is to say, if the College did not exist local governments would receive some tax revenue that they currently do not receive. This foregone tax revenue is most definitely a cost to local governments.

By assuming that the property now occupied by the College would have been zoned residential, the 165 acres would

generate 640 lots with an assessed value of approximately $2000 per unimproved lot. The yearly taxes on each lot would be approximately $225. On the basis of these estimates, the tax exempt status of the College represents a cost in foregone real-property tax revenue of approximately $144,000 per year.[15]

This estimate is clearly an underestimation. No consideration was given to the assessed value of improvements, nor was any consideration given to some of the property being zoned commercial. Both of these considerations would lead to higher tax revenue and thus a higher opportunity cost to local governments.

THE IMPACT ON LOCAL EMPLOYMENT

Economic Base Theory and Regional Employment Multipliers

The economic base of a regional economy such as School District 68 consists of those economic activities which result in the production of goods and services for sale either outside of the region or else in-region to outsiders. Organizations which are part of the economic base constitute the basic or export sector of the local economy while other organizations are considered to be part of the local service (non-basic) sector since their output is consumed within the region.[16] An educational institution such as Malaspina College is part of the basic sector as a large portion of its services

---

[15]Unofficial estimates were provided by B. C. Assessment Authority.

[16]Local service (non-basic) industries generally include retail and wholesale trade, construction, local transportation, communication and utilities, finance, insurance and real-estate, community, personal and business service and local public administration.

are consumed within the local economy by outsiders.

Economic base theory is a theory of export led growth. It rests on the proposition that in an economy such as Canada's with a high degree of regional specialization, the growth and income level of any particular region depends upon its ability to export goods and services. Because a large portion of the local service sector's output goes to fulfil the needs of the organizations and, in particular, the people employed in the export sector, the service sector is viewed as being dependent upon the export sector for income and jobs.

By asserting that there is a stable relationship between the employment levels of both sectors, economic base theory predicts that a change in the level of employment in the export sector leads to a change in the level of employment in the local service sector by some multiple of the growth in export jobs.[17]

On the basis of preliminary estimates made for this study and research currently under way regarding the regional economy of Nanaimo, an employment multiplier of 2.3 was estimated for the local economy (Appendix E). This means that every new job created in the basic or export sector of the local economy might be expected to support 2.3 new positions in the non-basic or local service sector.

Employment Supported By Wages And Salaries of College Personnel

By applying the employment multiplier to the 257 full-time College employees, the wage and salary expenditures of the College were estimated to support 591 jobs in the local economy.

---

[17]There are a number of issues surrounding economic base theory that are currently under debate. Most of these issues are discussed in textbooks dealing with urban and regional economics.

Employment Supported By Student Non-Housing Expenditures and College Non-Salary Operating Expenditures

The full extent of the College's impact on local employment must take into consideration the number of direct and indirect jobs supported by the non-operating expenditures of the College and the non-housing expenditures of students.

The number of direct jobs supported by the student expenditures was forty. This estimate was determined by dividing total student non-housing expenditures ($1,498,340) by the value of retail trade per retail employee in Nanaimo.[18] The total number of direct and indirect jobs associated with these student expenditures was 92 (40 X 2.3).

The number of direct and indirect jobs supported by the non-salary operating expenditures was estimated in a similar fashion except data for the Nanaimo wholesale industry was used in place of the retail figures.[19] A total of 12 jobs were supported by the $518,184 of non-salary operating expenditures.

Total Employment Supported by College Operating Expenditures

On the basis of the previous calculations, a total of

---

[18]Nanaimo retail businesses employed 2075 people and sold goods and services totalling $7,751,600. Statistics Canada, Retail Trade. Catalogue No. 97-702, Ottawa: Queen's Printer, December, 1976. Statistics Canada, Industries by Sex. Catalogue No. 94-743, Ottawa: Queen's Printer, 1971. Census of Canada.

[19]In 1971 the Nanaimo wholesale trade industry employed 625 people and sold goods and services valued at $62,069,000. Statistics Canada, Wholesale Trade. Catalogue No. 97-723, Ottawa: Queen's Printer, June, 1977. Statistics Canada, Catalogue No. 94-743.

695 jobs were estimated to be supported by the operating expenditures of the College.

There is reason to believe that this estimate is too high. This conclusion is based on the findings of other research which indicates that the employment multiplier for the local economy is not low enough. The size of the multiplier is positively related to the geographical size of the economy being studied, the diversity of its commercial and industrial activity and the size of its population. Steven Weiss and Edwin Gooding have estimated employment multipliers ranging from 2.5 to 3.0 for some of the states of the U.S.A. as well as a multiplier of 2.2 for Los Angeles County, California.[20]

It is likely that a more rigorous estimation procedure would lead to a smaller economic base employment multiplier. The procedure used in Appendix E was based on 1971 Census data for the Nanaimo Census Agglomeration. Although the geographical boundaries of the Census Agglomeration closely match those of School District 68, the use of 1971 data (the latest that is available), assumes the 1971 relationship between basic and total employment holds today. The use of the national economy as a bench-mark in the location-quotient analysis rather than a smaller regional economy whose structure parallels that of School District 68 also biases the magnitude of the employment multiplier. Under the circumstances, one should consider the employment multiplier as an upper-bound estimate.

---

[20]Steven J. Weiss and Edwin C. Gooding, Estimation of Differential Employment Multipliers in a Small Regional Economy, Research Report to the Federal Reserve Bank of Boston No. 37 (Boston, 1966), p.38. Cited in Caffrey and Isaacs, p.44.

THE IMPACT OF COLLEGE-RELATED CONSTRUCTION

Introduction

In September, 1976, as addition to the Malaspina College Campus was completed and ready for occupancy after some two years of construction. Although the impact of these expenditures does not correspond to the same period as the others, a study such as this would be incomplete if it did not address itself to the local impact of such a major College-related expenditure.

The basic approach was to break the total value of each individual contract associated with the construction into four categories of expenditures. There were wages and salaries, deductions from wages and salaries, materials and profit. Once this was completed the local component of each category (except deductions) was estimated for each contract.[21] In an attempt to arrive at amounts for each category and the portion spent locally, a combination of procedures was used which included a telephone survey of the contractors, the use of national construction industry statistics and an interview with Mr. Charles Muir, Project Manager for Concordia Management Company Limited.

Although the total value of the construction was approximately $12.6 million, only the $9.79 million of building and site work was taken into consideration.[22] The balance of the total cost was for such items as plans, surveying, furnishings, equipment and the fees and requirements of Concordia Management. Of the $9.79 million of building and site work,

---

[21]All of the deductions were assumed to have no benefit on the local economy.

[22]Concordia Management Company Ltd., Commitment Report, January 31, 1977.

firms located within the local economy received approximately $4.48 million while the balance of $5.31 million was paid to firms whose head office was located outside of School District 68.

Local Expenditures on Wages and Salaries

The total amount of disposable income received by local workers was approximately $2,390,866. This figure was arrived at by subtracting payroll deductions for income tax, union dues, retirement benefits, etc. ($1,258,344) from the total gross income paid to local workers by local and non-local firms ($3,649,210). Local firms were assumed to have paid 100 percent of their cost of labour to local individuals while non-local firms, according to the survey results, paid 28.8 percent of their wage bill to local workers. The amount of local disposable wage income paid by local and non-local firms amounted to $1,696,306 and $694,560 respectively.

Local Expenditures on Materials

Although just slightly less than half of the total cost of buildings and site work ($4.42 million) was spent on materials, only $720,436 was purchased locally. Of this amount, $655,780 was attributable to the expenditures of local firms. In total, expenditures for materials purchased outside of and within the local economy amounted to $1,913,070 for local contractors and $2,504,270 for non-local contractors.

Profits

The amount of profit was estimated to be $321,004. This represents 3.27 percent of the total cost of the buildings and site work which is slightly in excess of the 2.7 percent profit on sales recorded for Canadian building contractors in 1973.[23] By using the address of the firm as an indicator of

---

[23]Canadian Imperial Bank of Commerce, Capital at Work, Commercial Letter, Issue No. 1, 1977. (data provided by Statistics Canada).

where the profits would reside, it was estimated that $110,525 in profits remained in the local economy.

Total Expenditures and the Multiplier Effects

On the basis of the previous calculations, the total direct impact on the local economy was $3,221,827. This represents only the initial round of transactions. The final impact of these College-related construction expenditures must take into consideration the effects of the expenditure and income multipliers.

Just as the income multiplier was applied to the salaries and wages of full-time College personnel, it was also applied to the income earned by construction workers. As a consequence, the $2,390,866 of local disposable income generated direct and indirect income totalling $3,227,669 ($2,390,866 X 1.35).

Likewise, the expenditure multiplier was applied to the amount spent on materials. The result was $389,035 in additional local income. ($720,436 X 0.54)

In total, the direct and indirect local income generated by the buildings and site work phase of the recently completed construction work amounted to $4,447,664.[24]

---

[24]The proper use of expenditure and income multipliers is dependent upon the separation of total profits into retained earnings, which is eventually spent on capital equipment, and dividends, a form of income to individuals. Because this procedure is rather tedious and because of the relatively small amount of local profits, the indirect impact of profits was not calculated.

A critique of this portion of the study has been omitted because many of the limitations are theoretically similar to those concerning the impact of other College-related expenditures. For example, the reliability of the sample data resulting from the construction survey.

Employment Supported by Construction Expenditures

The estimation procedure employed here was similar to the one used to calculate the number of direct and indirect jobs supported by the College's non-salary operating expenditures. The number of direct local jobs supported by the total local construction expenditures was estimated to be 52. This figure was determined by dividing $2,936,470, the amount of local construction expenditures on wages and salaries and materials, by the value of total construction work in British Columbia per B.C. construction worker.[25] The number of local jobs supported directly and indirectly by these expenditures was estimated to be 120 (2.3 X 52).

---

[25]In 1976, the total value of construction work performed in B.C. was $4,273,856,000 and the number of workers employed was 76,256. Statistics Canada, Construction Work in Canada, 1974 - 1976, Catalogue No. 64-201, Ottawa, Queen's Printer.

CONCLUSION

Although there may be a great temptation to do so, it is not possible to use the results of this study to arrive at a conclusion regarding the ultimate cost-benefit relationship of Malaspina College to the local economy. This cannot be done for essentially three reasons. First, not all of the costs and benefits have been taken into consideration. For example, the costs related to the maintenance of certain assets associated with the presence of the College, such as College-related business inventories, have been neglected. In addition, a number of benefits, such as the expansion of the local credit base resulting from College-related deposits in local financial institutions, have also been omitted. Second, and probably the most important reason, the methodology of the study does not in any way approximate the logic of economic cost-benefit analysis. Finally, the purpose of this study was to measure the impact of the College on the local economy. Because of the narrowness of this objective, discussions regarding the cultural, social and educational benefits of the College were disregarded. For these reasons, one must simply assess each of the estimated impacts in isolation of all the rest. They cannot be aggregated to arrive at a summary figure regarding the cost-benefit impact of the College.

Based on the results of this study, there is ample justification to conclude that Malaspina College, whose purpose it is to assist individuals in their pursuit of a wide variety of educational objectives as well as to enhance the cultural and social environment of the community it serves, makes, in the pursuit of these objectives, a major contribution to the strength of the local economy.

APPENDICIES

APPENDIX A

College Employee Questionnaire

1. What is your College status?
   Faculty ___ Administration ___ Staff ___
2. Do you reside within the boundaries of School District 68?
   Yes ___ No ___
3. How many persons are there in your household? ___
   How many persons attend public school (grades K - 12)? ___
4. In what type of housing do you currently reside?
   Rent ___ Own or Buying ___
5. If you are renting, what proportion (%) of your take home pay is your monthly rent, including utilities? ___%
6. If you own, or are buying your home, what proportion (%) of your take home pay is your monthly housing expenditure, including principal, interest, taxes and utilities? ___%
7. What is the amount of your monthly non-housing expenditures? (Monthly take home pay minus housing expenditures as defined in question 5 for renters and question 6 for home owners)
   $ _____
8. Of the amount indicated in question 7, how much is spent in business establishments located within the boundaries of School District 68? $ _____
9. Do you pay any fees, other than real property taxes, for services such as water, sewage, garbage collection etc., to a local government or one of its agencies?
   Yes ___ No ___
10. If you answered "yes" to question 9, how much are the fees per month? $ _____. Which local government agency receives these fees? _____

APPENDIX B

Student Questionnaire

1. What programme are you enrolled in?

_____

(Note: This question was not used in the survey of career, academic and technical students.)

2. What kind of living accommodation do you have? (Check one only)

a) Rent ___ c) Live at home ___

b) Room and Board ___ d) College Dorms ___

3. How much rent (room and board or dorm fees) do you pay per month? (The amount should be your share per month?) $ _____

4. How much do you spend per month, excluding rent or room and board or dorm fees?

$ _____

5. Of the amount given in Question 4, how much do you spend in the Nanaimo area (School District 68)?

$ _____

6. Do you have any children attending public school? If so, how many?

_____

APPENDIX C

Calculation Of The Income And Expenditure Multiplier

Previous studies have indicated that, on average, approximately $0.33 to $0.35 of every dollar spent in the local economy is returned to the spenders as income while the balance is saved or spent on local and non-local materials, supplies, taxes, etc.[26] If $0.35 of every dollar spent locally is returned as income, and if this proportion holds for each successive round of transactions, the amount of additional income generated from the initial dollar of expenditure will be $0.54 (the sum of the infinite geometric progression). The expenditure multiplier is therefore 0.54 and was used to determine the amount of additional income arising from student and College non-salary expenditures.

The income multiplier measures the subsequent impact of an initial income stimulus arising, for example, from the expenditure of income earned by College personnel. Its magnitude is affected by the propensity to import and the proportion of income generated per dollar of local expenditure. According to the information obtained from the survey of full-time College personnel, $0.68 of every dollar of wage income received by local employees was spent in the local economy. That is to say, the average propensity to import was 0.32, or with each successive round of transactions, $0.32 of every dollar leaves the local economy.[27] Because of the recognized

---

[26] B.C., Department of Economic Development, pages 4 - 10, and Caffrey and Isaacs, page 44.

[27] According to economic theory, the marginal propensity to import, or the relation between changes in imports and changes in income, should be used in determining the income multiplier. In this study the marginal propensity to import and the average propensity to import are assumed to be the same.

APPENDIX C (continued)

fact that the propensity to import is positively related to the level of income, the propensity of College employees to import was arbitrarily reduced to 0.25 to reflect the lower average incomes of the local economy. Once the propensity to import has been estimated, all that remains is to adjust this amount by the proportion of income generated per dollar of local expenditure which was previously assumed to be 0.35. Thus the local income multiplier becomes:[28]

$$\frac{1}{\text{average propensity to import} \times \frac{\text{local income generated}}{\$ \text{ of local expenditures}}}$$

or

$$\frac{1}{.25 \times .35} = 1.35$$

[28]Adapted from B.C., Department of Economic Development, pages 4 - 10.

APPENDIX D

Local Governments' Operating Costs For All Municipal Services Except Public Schools

CITY OF NANAIMO

Total General Fund Expenditures		$ 22,379,983
Minus:		
Conditional Transfers to Other Governments	971,958	
Transfer Tax Levies for Other Governments	7,601,250	
Sub Total		$ 13,806,775

Source: City of Nanaimo, 1977 Annual Budget, pp. 32 and 18.

TOWN OF LADYSMITH

Total Expenditures		$ 1,355,800
Minus:		
Conditional Transfers to Other Governments	24,339	
Tax Levies for Other Governments	532,332	
Sub Total		$ 799,129

Source: Town of Ladysmith, 1976 Financial Statement.

APPENDIX D (continued)

REGIONAL DISTRICT OF NANAIMO

Total Expenditures		$ 4,393,647
Minus:		
Expenditures Obviously Not Within School District 68		
Solid Waste Disposal, Electoral Areas E, F, G, and H	19,866	
Local Works and Services:		
Coombs	5,874	
Errington	14,994	
Nanoose	26,905	
French Creek	27,054	
District 69 Arena	316,916	
Sub Total		$ 3,982,038
Expenditures Allocated To School District 68		3,344,991

$$3{,}982{,}038 \times \frac{\text{S.D. 68 Population}}{\text{Reg. Dist. Population}}$$

Source: Regional District of Nanaimo, Financial Statements, December 31, 1976, Statement E.

TOTAL LOCAL GOVERNMENT EXPENDITURES $17,950,818

APPENDIX E

Calculation Of The Employment Multiplier

The initial step in calculating the employment multiplier is to categorize business and non-business organizations according to whether their output is intended primarily for export or local consumption. Under this method the entire labour force of the local economy is assigned to either the basic (export) or non-basic (local service) sector.

Whenever the entire output of an industry is exported the total labour force of the industry is classified as basic. In many cases however, only a portion of the output is exported while the balance is destined for local consumption. In this situation, a number of adjustment procedures can be used one of which is location-quotient analysis.

In an industry such as retail trade, for example, the proportion of retail jobs in the local economy is compared to some bench-mark economy such as another region, the province or the country as a whole.[29] If the proportion of total local employment in retail trade is equal to the proportion in the bench-mark economy then the employment in retail trade is considered to be just sufficient to meet the needs of the local economy and is classified as non-basic. If the proportion is greater than the bench-mark economy, then the amount by which it exceeds the bench-mark economy is deemed to be part of the basic or export sector.[30]

---

[29]The Canadian economy was used in this study.

[30]The use of retail trade as an example is particularly relevant for the Nanaimo area. The Financial Post Survey of Markets for 1976 reveals that per capita retail sales for Nanaimo were 131 percent above the national average while per capita income was only 12 percent above the national average.

APPENDIX E (continued)

Another method of adjustment is based on the proportion of non-local funds used in providing government services to local people. In many cases the services received by local people are the result of provincial and federal funds and although a portion or all of these funds may be recycled local tax dollars, the assumption is that jobs supported by provincial or federal funds are basic or part of the export sector.

Once these and possibly other adjustments are completed a reasonably accurate estimate of basic and non-basic employment can be made. Of the 15,585 people who comprised Nanaimo's labour force in 1971, 6722 were deemed to be employed in the basic sector. On the basis of these figures, the employment multiplier was calculated to be:[31]

$$\frac{\text{total employment}}{\text{basic employment}} = \frac{15,585}{6722} = 2.32$$

From these two figures one can conclude that Nanaimo exports a great deal of its retail output.

[31] Hugh O. Nowse, Regional Economics: A Study in Economic Structure, Stability and Growth of Regions (Toronto: McGraw - Hill Co., 1968), p. 168.

CALCULATION OF BASIC EMPLOYMENT

INDUSTRY	TOTAL EMPLOYMENT	BASIC EMPLOYMENT
Primary Industries	1,315	1,315
Manufacturing		
Wood Industries	650	520[b]
Pulp and Paper Mills	985	985
Other	725	580
Construction	1,175	197[c]
Transportation and Communication	1,650	433[c]
Trade	2,700	407[c]
Finance, Insurance and Real-Estate	565	---
Community, Business and Personal Services		
Public Schools (K to 12)	660	297[de]
Vocational Schools	75	75[d]
Universities and Colleges	95	57[df]
Hospitals	485	412[dg]
Welfare Org.	105	105[d]
Restaurants	385	104[c]
Accommodation	430	430
Other	1,455	---
Public Administration		
Federal	560	560
Provincial	245	245
Local	155	---
Unspecified	1,170	---
TOTAL	15,585	6,722

Source: Statistics Canada, 1971 Census of Canada, Industries by Sex, Catalogue No. 94-243. Ottawa: Queen's Printer; also Statistics Canada, Census Agglomerations, Catalogue No. 98-702. Ottawa: Queen's Printer.

Estimates based on Location-Quotient analysis and Source of Funds were completed by Chris McDonnell, Social Science area, Malaspina College.

[a]Agriculture, Forestry, Fishing and Trapping and Mines

[b]Eighty percent assumed to be basic employment

[c]Estimated by Location-Quotient Analysis

[d]Estimated by Source of Funds

[e]Assuming 45 percent provincial financing

[f]Assuming 60 percent provincial financing

[g]Assuming 85 percent provincial financing

BIBLIOGRAPHY

Allen, J., B. Ebel, and B. Bilgin. Report on the Economic Impact of the University of Lethbridge on the City of Lethbridge. Economics Department, The University of Lethbridge, March, 1976.

British Columbia Assessment Authority. 1977 Preview Roll. Area 04, Nanaimo. February 19, 1977.

British Columbia, Department of Economic Development. BC/NKK Joint Steel Mill Feasibility Study - Preliminary Assessment. April, 1976.

Caffrey, John and Herbert H. Isaacs. Estimating the Impact of a College or University on the Local Economy. Washington, D.C.: American Council on Education, 1972.

Canadian Imperial Bank of Commerce. Capital at Work. Commercial Letter, Issue No. 1, 1977.

Concordia Management Company Ltd. Commitment Report. January 31, 1977.

Construction Industry Profile, prepared by Construction Industry Development Council, February, 1977.

Davis, H. Craig. An Inter-Industry Study of the Metropolitan Vancouver Economy. Faculty of Commerce and Business Administration, University of British Columbia.

Financial Post. Survey of Markets, 1975 - 76. Toronto: MacLean-Hunter Ltd., 1975.

The Town of Ladysmith Financial Statements for the year ended December 31, 1976.

Malaspina College Financial Statements and Schedules for the year ended March 31, 1977.

Malaspina College purchase orders for the period of September, 1976 to February, 1977.

Muir, Charles. Project Manager, Concordia Management Company. Personal interview. March, 1977.

City of Nanaimo. 1977 Annual Budget. May 9, 1977.

Nourse, Hugh O. Regional Economics: A Study in Economic Structure, Stability and Growth of Regions. Toronto: McGraw-Hill Co., 1968.

Regional District of Nanaimo Financial Statements for the year ended December 31, 1976.

Rowledge, R. G. Director of Finance, City of Nanaimo. Personal interview. May, 1977.

Statistics Canada. Census Agglomerations. Catalogue No. 98-702. Ottawa: Queen's Printer.

Statistics Canada. Construction Work in Canada, 1974 - 1976. Catalogue No. 64-201. Ottawa: Queen's Printer, October, 1976.

Statistics Canada. Final Population Counts 1976 Census for Census Divisions and Subdivisions British Columbia and Yukon. Ottawa: Queen's Printer.

Statistics Canada. Industries by Sex. Catalogue No. 94-743. Ottawa: Queen's Printer, 1971.

Statistics Canada. Retail Trade. Catalogue No. 97-702. Ottawa: Queen's Printer, December, 1976.

Statistics Canada. Wholesale Trade. Catalogue No. 97-723. Ottawa: Queen's Printer, June, 1977.

The Economic Impact of the University of Calgary on the City of Calgary. Report No. 64. The University of Calgary, Office of Institutional Research, October, 1971.

Weibelzhal, D. Assistant Secretary-Treasurer, School District 68. Personal interview. May, 1977.

Weiss, Stephen J. and Edwin C. Gooding. Estimation of Differential Employment Multipliers in a Small Regional Economy. Research Report to the Federal Reserve Bank of Boston No. 37. Boston, 1966.